skypatrol™

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Skypatrol Evolution
GSM/GPRS Mobile Location Unit
Test Interface Users' Manual

Release 1.00a

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evolution SERIES

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Test Interface User's Manual
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1 Introduction

Congratulations on your purchase of the Skypatrol, LLC.Test Interface for Evolution MLU. This solution is designed to provide a testing platform that can be used for simulating all of the hardware features of the Evolution MLU solution. Inputs, outputs, audio, and power are provided along with all of the necessary cabling to make testing convenient and easy. The following manual will detail the setup and use of the solution. Once again, thank you for your purchase.

2 Overview

The test interface is a self-contained testing platform providing all of the necessary hardware interfacing required to use in conjunction with the Evolution MLU platform. The interfaces are modular, easy to access and use. The platform is designed to quickly accommodate testing the hardware features available on the MLU product.

3 Important Safety Information

Retain and follow all product safety and operating instructions. Observe all warnings on the product and in the operating instructions.

To reduce the risk of bodily injury, electric shock, fire, and damage to the equipment observe the following precautions.

3.1 Precautions

Avoid hot areas: The product should be placed away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

Avoid wet areas: Never use the product in a wet location.

Avoid pushing objects into product: Never push objects of any kind into housing slots or other openings in the product.

Use product with approved equipment: This product should be used only with your device and options identified as suitable for use with your equipment.

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4 Terms and Abbreviations

Acronym	Description
AVL	Automated Vehicle Location
I/O	Input/Output
GPIO	General Purpose Input Output
LED	Light Emitting Diode

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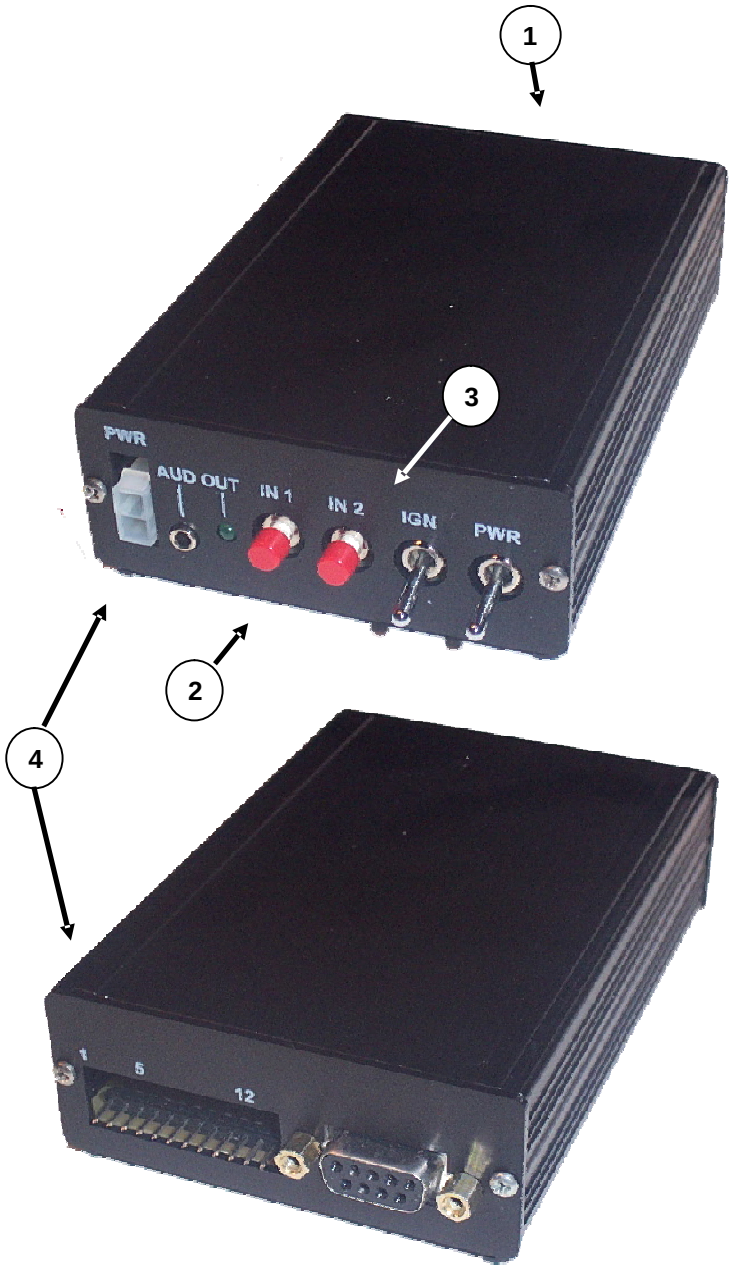
5 Hardware Features

	Features /Benefits
1	**Modular Case –** The test box uses the same housing as the MLU and can be attached for ease of testing.
2	**Comprehensive Design** - The design accommodates all of the MLU features for quick and easy testing.
3	**Simple to Use** – All interfaces are clearly marked and easy to access.
4	**Quick Connections** – All connections are simple and easy to access.



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6 Technical Specifications

SPECIFICATIONS	
HOUSING:	
Material:	**Extruded Aluminum**
Dimensions:	**4.25 x 3.5 x 1.25 in.**
I/O:	
Input:	**(2) Momentary Contact Push Buttons**
Output:	**(1) Single Color LED**
Audio:	**(1) Single-Ended 2.5mm Audio Jack**
Ignition:	**(1) Power Switch**
CONNECTIONS:	
Interface:	**12-pin AMP connector**
Power:	**2-pin Molex connector**
Data:	**9-pin serial DSUB9 connector with spoofed signals***

* The MLU platform only provides a 3-pin serial connection. The 9-pin serial interface provides appropriate signaling for proper RS232 communication.

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7 Test Box – Front and Back Views

Figure 1 – Test box front view

Figure 2 – Test box back view

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8 Platforms Supported

The MLU Test Interface has been designed to work with the Evolution MLU platform. Currently, this is the only platform supported.

9 Recommended Uses

The test interface is designed to support the integration efforts of developers that are designing solutions around the supported platform. All I/O, power, audio and serial data communication are provided in the solution. The platform is designed to expedite the development and integration efforts.

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10 Making Connections

Making the connections between your modular cable, peripheral device, and your AVL platform is simple and straightforward. The following sections provide the details related to each specific platform. As new platforms are supported, new sections will be added to the document.

10.1 Stacking the Test Interface (Optional)

The test interface box uses the same case as the Evolution MLU device. The box can be connected to the MLU, if desired, to simplify the mechanics of testing. This process is not mandatory and does not affect the use of the test box. To stack the boxes, remove the screws from the back of the test box and the front of the MLU. See figure 3. Slide the MLU into the channels on the top of the test box. See figure 4. Once the cases are connected, replace the panel on the back of the test box and the front of the MLU. The completed stack is shown in figure 5.

Figure 3 – Removing screws from test box

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Figure 4 – Sliding MLU into mounting channel

Figure 5 – Completed stack

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10.2 Connecting the Interface Cable

To test using the box, connect one end of the cable to the MLU. Make sure that the cable connector is oriented in the proper manner. See figure 6. Connect the other end of the cable to the test box. Make sure that the connector is oriented in the proper manner (pin orientation and color sequence). See figure 7. If the cables are not connected properly, the box will not operate correctly and could damage the MLU.

Make sure that you connect the interface cable as demonstrated below. Failure to do so may result in unpredictable operation.

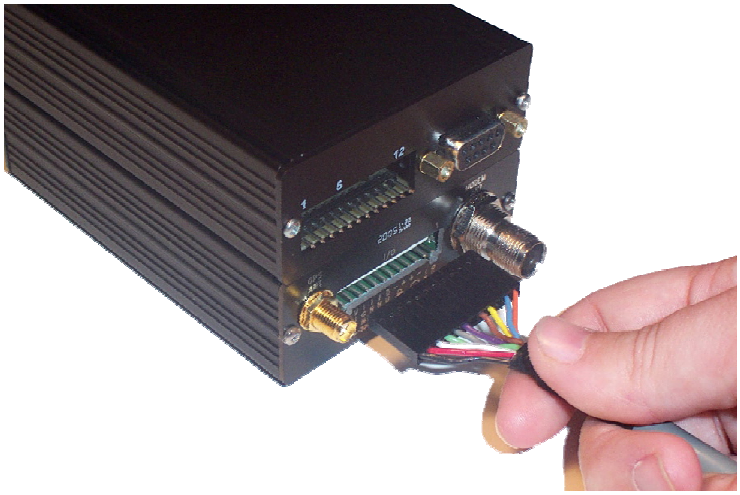

Figure 6 – Connecting interface cable to MLU

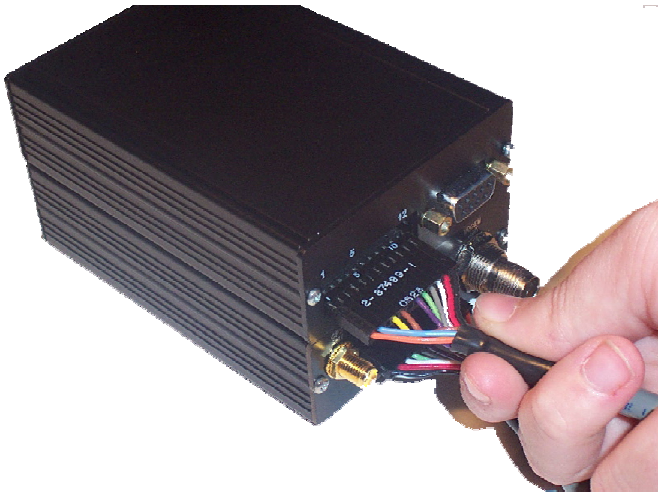

Figure 7 – Connecting interface cable to test box

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10.3 Connecting the Serial Cable

To communicate with the mobile device platform, a serial cable must be connected to the test box. The data that is entered will pass through the test box to the end device. See figure 8.

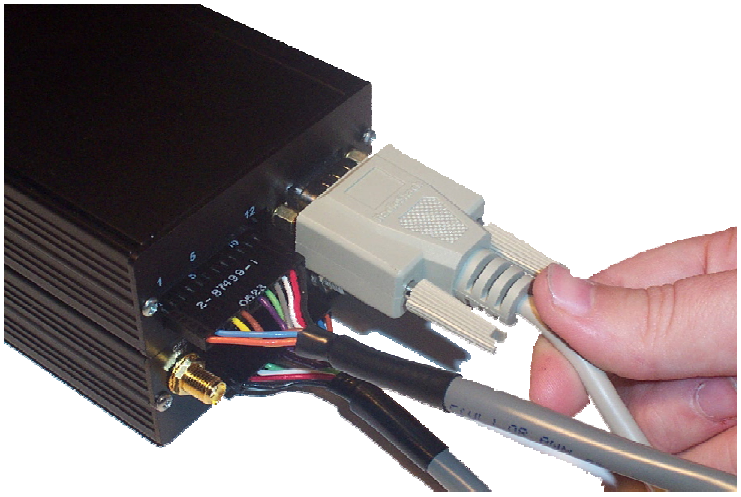

Figure 8 – Connecting a serial cable to test box

10.4 Connecting the Power Cable

Once all other connections have been made, the power cable should be connected to the test box. Simply connect the power cable provided to the power interface on the test box. You should see the power indicator on the wireless device light once power is applied. See figure 9.

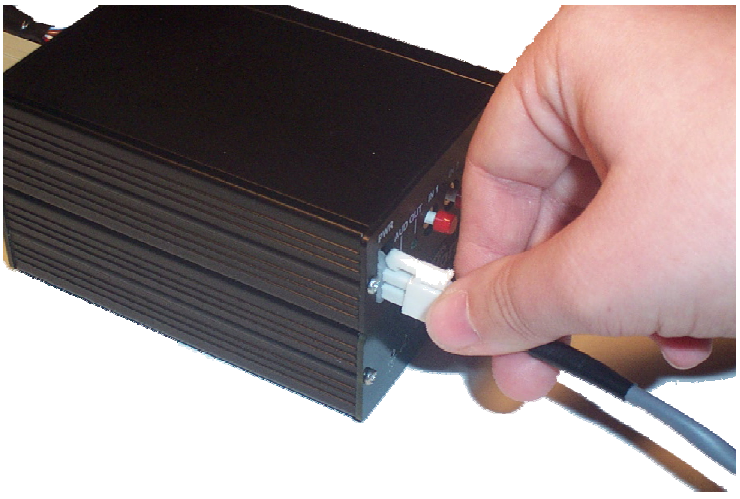

Figure 9 – Connecting the power cable to test box

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10.5 Testing I/O with an Evolution MLU

The following information will provide basic event programming scenarios for testing the I/O interface on the test box. Events will be combined to provide the most efficient use of the event engine to validate proper I/O operation.

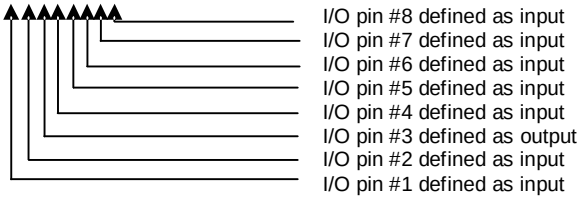
The MLU uses GPIO line 1 for input line 1
The MLU uses GPIO line 2 for input line 2
The MLU uses GPIO line 3 for the output line

The following events will enable the following I/O operation:

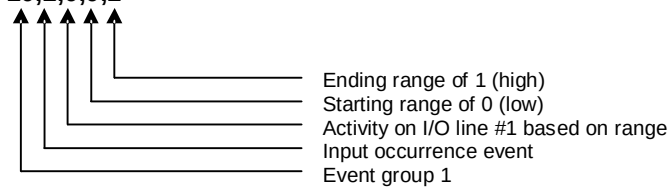
Press input button 1 and the output LED will flash at 1 second intervals

Press input button 2 and the output LED will flash at 5 second intervals

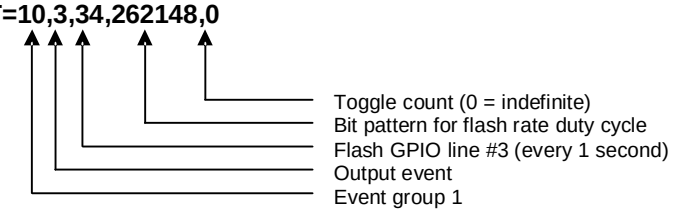
AT$IOCFG= 11011111


I/O pin #8 defined as input
I/O pin #7 defined as input
I/O pin #6 defined as input
I/O pin #5 defined as input
I/O pin #4 defined as input
I/O pin #3 defined as output
I/O pin #2 defined as input
I/O pin #1 defined as input

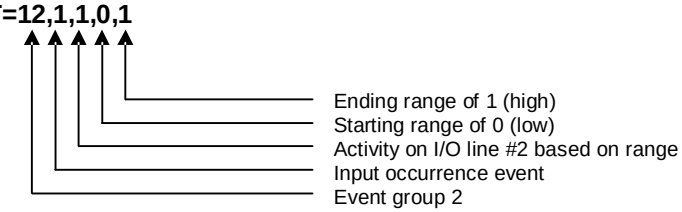
AT$EVENT=10,1,0,0,1



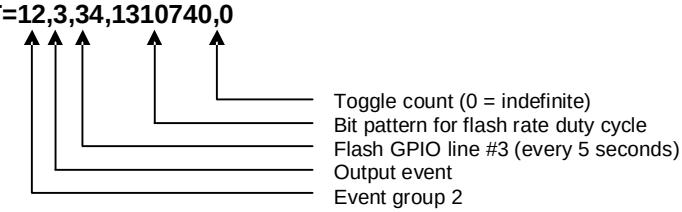
AT$EVENT=10,3,34,262148,0


Toggle count (0 = indefinite)
Bit pattern for flash rate duty cycle
Flash GPIO line #3 (every 1 second)
Output event
Event group 1

AT$EVENT=12,1,1,0,1



AT$EVENT=12,3,34,1310740,0


Toggle count (0 = indefinite)
Bit pattern for flash rate duty cycle
Flash GPIO line #3 (every 5 seconds)
Output event
Event group 2

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10.6 Testing Audio with an Evolution MLU

The following information will provide a basic process for testing the audio interface. Please note that the audio interface is a single ended design. That is, the additional pair of audio lines have not been wired to the audio jack. It is the responsibility of the integrator to design the appropriate audio interface with appropriate filtering and amplification for the desired implementation.

It is recommended that the following commands be entered to adjust the audio parameters on the MLU device.

AT$VSELECT=0

AT$VLVL=5

AT$VGT=12

AT&W

To test the audio interface on the test box, attach a standard cellular headset to the plug. Bring up a terminal application like HyperTerminal or Procomm. Place a call to the phone number of the wireless device. You will see an ASCII string of RING displayed on the terminal. Type ATA and press enter. Your call will now be connected. You are now able to use the voice connection. To terminate the call, enter ATH in the terminal window and press enter.

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If your chosen headset does not work, you have the ability to change the configuration of the audio connector. To accomplish this, remove the back cover of the test box. See figure 10. Carefully slide the board out of the case and locate the jumper as indicated in figure 11. Change the jumper setting as demonstrated in figure 12. This is a very simple soldering task. Carefully replace the panel and test again.

Figure 10 – Remove back cover of test box

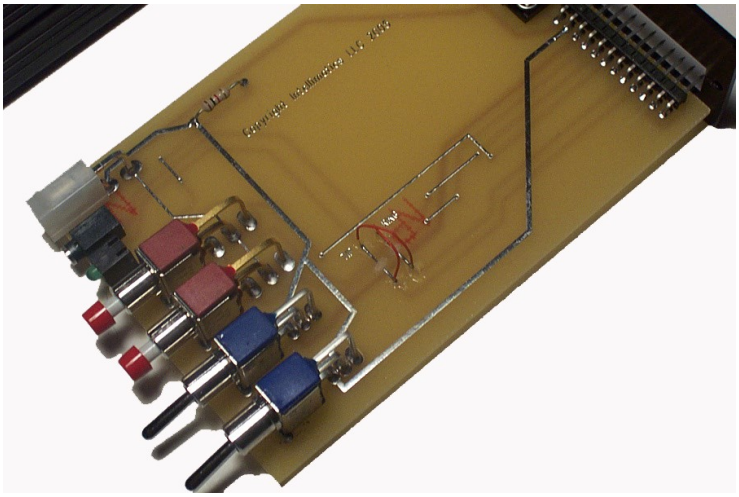

Figure 11 – Locate audio jumper

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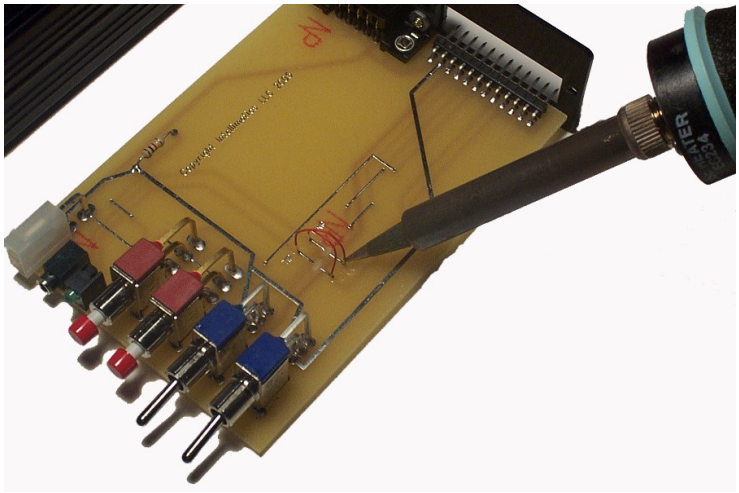

Figure 12 – Change jumper setting

Please note that the audio interface is a single ended design. That is, the additional pair of audio lines have not been wired to the audio jack. It is the responsibility of the integrator to design the appropriate audio interface with appropriate filtering and amplification for the desired implementation.

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End of Document

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